What is Claimed is:

1. A method of isolating deoxyribonucleic acid (DNA) from a biological material which comprises mechanically releasing said DNA from said material by the application of rapidly oscillating reciprocal mechanical energy to said material in the presence of a preselected volume of a liquid medium in a container to produce a released DNA solution, said application of said energy conducted by subjecting said material to oscillations at an oscillatory rate of between about 25 hertz (Hz) to about 133 Hz and effective to produce an average linear acceleration in the material in the range of from about 150 times gravity (g) to about 415 times g for a period of time of between about 3 seconds to about 5 minutes.

2. The method of claim 1 wherein said oscillatory rate is from 50 Hz to 100 Hz.

3. The method of claim 1 wherein said period of time is from 10 to 120 seconds.

4. The method of claim 1 wherein said biological material is a soft tissue, said oscillatory rate is about 50 Hz producing about 150 x g and said time period is about 10 to 30 seconds.

5. The method of claim 4 wherein said soft tissue is selected from the group consisting of liver, spleen, brain, lymph, bone marrow, leukocytes, nucleated red blood cells and tissue cultured cells.

6. The method of claim 1 wherein said liquid medium further contains detergent in an amount from about 0.1 to 10 % weight per weight (w/w).

7. The method of claim 1 wherein said container further contains one or more particles which, upon oscillation, impact the material and facilitate the isolating process.

8. The method of claim 7 wherein said particles occupy a volume equal to from 1 to 100 % of the liquid

medium volume.

9. The method of claim 7 wherein said particles comprise one spherical bead.

10. The method of claim 9 wherein said spherical bead has a volume of about 5 to 80 % of the liquid medium volume.

11. The method of claim 7 wherein said container has substantially cylindrical walls and said one or more particles comprise a spherical bead which has a clearance between the particle and inner container wall of from 0.025 to 3 millimeters (mm).

12. The method of claim 11 wherein said detergent is 0.1 to 5 % and said clearance is from 0.8 to 1.5 mm.

13. The method of claim 9 wherein said biological material is a medium soft tissue, said oscillatory rate is about 100 Hz producing about 300 x g, said time period is about 20 to 40 seconds, said liquid medium comprises about 0.1 to 5 % detergent and said sphere is a teflon sphere having a volume of about 10 to 50 % of the liquid medium volume.

14. The method of claim 13 wherein said container has substantially cylindrical walls and said sphere has a clearance between the sphere and inner container wall of from 0.8 to 1.5 mm.

15. The method of claim 14 wherein said detergent is 0.5 to 3 % and said clearance is about 1 mm and said sphere has a diameter of 5 to 10 mm.

16. The method of claim 13 wherein said medium soft tissue is selected from the group consisting of kidney, heart, muscle, blood vessels, tumor or tissue biopsies, immature plant tissue, fruit, flowers, sprouts, young leaves, nematodes and bacteria.

17. The method of claim 9 wherein said biological material is a medium hard tissue, said oscillatory rate is about 100 Hz producing about 300 x g, said time period is about 20 to 40 seconds, said liquid medium comprises about

0.1 to 5 % detergent and sphere is a ceramic sphere having a volume of about 10 to 50 % of the liquid medium volume.

18. The method of claim 17 wherein said container has substantially cylindrical walls and said sphere has a clearance between the sphere and inner container wall of from 0.8 to 1.5 mm.

19. The method of claim 18 wherein said detergent is 0.5 to 3 % and said clearance is about 1 mm and said sphere has a diameter of 5 to 10 mm.

20. The method of claim 17 wherein said medium hard tissue is selected from the group consisting of skin, cartilage, soft bone, tail snips, mature plant tissue such as mature leaves, tubers, legumes, chitinous tissues, whole insects, slime mold, yeast, algae and fungi.

21. The method of claim 9 wherein said biological material is a hard tissue, said oscillatory rate is about 100 Hz producing about 300 x g, said time period is about 30 to 60 seconds, said liquid medium comprises about 0.1 to 5 % detergent and said container includes a steel sphere having a volume of about 10 to 50 % of the liquid medium volume.

22. The method of claim 21 wherein said container has substantially cylindrical walls and said sphere has a clearance between the sphere and inner container wall of from 0.8 to 1.5 mm.

23. The method of claim 22 wherein said detergent is 0.5 to 3 % and said clearance is about 1 mm and said sphere has a diameter of 5 to 10 mm.

24. The method of claim 21 wherein said hard tissue is selected from the group consisting of seeds, bark, plant stems, tree trunks, rice, soybean, oats, corn leaf, kernels, grains, roots, bones, soil and fossils.

25. The method of claim 1 which further comprises the step of recovering said released DNA from said liquid medium.

26. The method of claim 25 wherein said recovering

comprises the steps of:

(a) adsorbing said released DNA in said released DNA solution onto a solid-phase DNA binding matrix to form solid-phase adsorbed DNA;

(b) washing non-adsorbed materials from said solid-phase DNA binding matrix; and

(c) eluting said solid-phase adsorbed DNA from said matrix.

27. The method of claim 26 wherein said solid-phase DNA binding matrix comprises silica particles.

28. The method of claim 25 wherein said recovering comprises the steps of:

(a) digesting said released DNA solution with ribonuclease (RNAse) to produce an RNAse-digested DNA solution;

(b) digesting said RNAse-digested DNA solution with proteinase to produce a proteinase-digested DNA solution;

(c) precipitating particulates in said proteinase-digested DNA solution by thoroughly admixing said solution with sufficient salt to precipitate insoluble materials and produce a DNA-containing supernatant; and

(d) recovering DNA from said DNA-containing supernatant to form isolated DNA.

29. The method of claim 25 wherein said recovering comprises the steps of:

(a) digesting said released DNA solution with about 0.1 to 5 mg/ml ribonuclease (RNAse) in the presence of about 0.1 to 5 % detergent by maintaining the released DNA solution under RNAse-digesting conditions to produce an RNAse-digested DNA solution;

(b) digesting said RNAse-digested DNA solution with proteinase K and pronase, each at about 0.1 to 5 mg/ml, by maintaining the RNAse-digested DNA solution at 25-60 degrees C for 1 to 15 minutes under gentle agitation to

produce an proteinase-digested DNA solution;

(c) precipitating particulates in said proteinase-digested DNA solution by thoroughly admixing salt at about 1 to 5 molar into the DNA solution and microcentrifuging the admixture at 10,000 to 15,000 times gravity for 5 to 15 minutes at about 4 degrees C to produce a DNA-containing supernatant; and

(d) recovering DNA from said DNA-containing supernatant to form isolated DNA.